



## MIT SCALE RESEARCH REPORT

The MIT Global Supply Chain and Logistics Excellence (SCALE) Network is an international alliance of leading-edge research and education centers, dedicated to the development and dissemination of global innovation in supply chain and logistics.

The Global SCALE Network allows faculty, researchers, students, and affiliated companies from all six centers around the world to pool their expertise and collaborate on projects that will create supply chain and logistics innovations with global applications.

This reprint is intended to communicate research results of innovative supply chain research completed by faculty, researchers, and students of the Global SCALE Network, thereby contributing to the greater public knowledge about supply chains.

**For more information, contact**  
MIT Global SCALE Network

**Postal Address:**

Massachusetts Institute of Technology 77  
Massachusetts Avenue, Cambridge, MA 02139 (USA)

**Location:**

Building E40, Room 267  
1 Amherst St.

**Access:**

Tel: +1 617-253-5320  
Fax: +1 617-253-4560

Email: [scale@mit.edu](mailto:scale@mit.edu)  
Website: [scale.mit.edu](http://scale.mit.edu)

**Research Report: ZLC-2008-12**

**Improving Global Health Impact Through Tailored Supply Chains: A Case Study of Ghana**

**Chiamin Lai and Michael Laverty**

**For Full Thesis Version Please Contact:**

**Marta Romero**

**ZLOG Director**

Zaragoza Logistics Center (ZLC) Edificio

Náyade 5, C/Bari 55 – PLAZA 50197

Zaragoza, SPAIN

Email: [mromero@zlc.edu.es](mailto:mromero@zlc.edu.es)

Telephone: +34 976 077 605

---

## **Improving Global Health Impact Through Tailored Supply Chains: A Case Study of Ghana**

Chiamin Lai and Michael Laverty

### **EXECUTIVE SUMMARY**

---

*A patient suffering from an acute case of pneumonia spends three hours and ten percent of her monthly income to travel to the nearest health facility only to find that the clinic has no antibiotics to give her.*

Despite the billions of dollars pouring into the developing world to improve global health sporadic drug availability is still all too common. How can this be? How can progress be made? The answer lies largely in improving public health supply chains.

The developing country context is a difficult one. Poor infrastructure, a lack of trained professionals, serious resource constraints and unpredictable supply are just a few of the difficulties that must be overcome. Furthermore, the complexity of public health supply chains is daunting. A public health care system typically manages over 3,000 products ranging from bulky bed nets to delicate vaccines that require a complete cold chain and life saving medicines. If these supply chains break down, people are without access to life sustaining medicines and the most vulnerable portion of the population suffers.

From a strategic perspective, improving public health supply chains in developing countries requires three things:

- A sound supply chain strategy that is appropriate to the country context.
- Adequate financial and human resources.
- A willingness and ability to implement.

Our research addresses the first of these.

#### **Objective**

Our research supports ministries of health (MoH) in developing their supply chain strategy by providing them with an approach for tailoring supply chain segmentations and support strategies to the country context in order to improve supply chain performance.

#### **Approach**

Our framework is based on segmentation and support strategy concepts that have been proven to be highly effective in the commercial world. Through 28 interviews with MoH officials, program managers, logistics professionals, health care workers, and pharmaceutical manufacturers, we developed an understanding of the needs, constraints, and current public health supply chains in Ghana. We then analyzed the Ghana case through the lens of

commercial world segmentation theory. This enabled us to adapt the theory to the developing country public health context in a way that is generalizable across countries. As a starting point we used three supply chain types, “Efficient”, “Responsive” and “Responsive Plus”, that had been identified by another research team conducting parallel segmentation research.

## **Results**

- **Baseline support strategies were developed** for each of the three aforementioned supply chain types. These strategies consisted of thirteen high level and operational categories including facilities, inventory, transportation, information, budget management and organization, and were designed to be applicable across countries.
- **A new framework was developed.** The framework enables ministries of health to systematically analyze country complexity in order to:
  1. Define the environments that become the basis for further supply chain segmentation.
  2. Tailor support strategies to those environments.
- **The framework was applied in Ghana** and four unique environments- distinguished by regional differences and facility size- were identified. The comprehensive set of baseline support strategies was then tailored to the specifics of each environment in order to guide the Ghana Ministry of Health to set an effective supply chain strategy that, when implemented, will improve overall performance.

## **Conclusion**

Throughout our research we have worked to develop a new lens through which to view public health supply chains in the developing world. Traditionally, supply chains have been organized and thought about in terms of vertical programs. Support strategies were typically developed by program managers and MoH personnel, but it is not entirely clear how the country context was taken into consideration when doing so. What we have tried to achieve is a new, purpose driven vision of supply chains that explicitly considers the country context and incorporates these realities into the customization of the supply chain segmentation and support strategies.

It is envisioned that the framework created here will eventually be implemented in a number of countries and will help the MoH to change the way it thinks about supply chains. Ultimately, our framework will enable the MoH to improve supply chain performance and to achieve better health outcomes.